

CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH

GILES S. PORTER, M.D., Director

Weekly  Bulletin

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GUY P. JONES
EDITOR

Early History of Malaria in California

(Continued from Bulletin of December 12, 1931)

R. G. Cleland in his "History of California American Period" refers to a trapper named Roubidoux who returned from California to Platte County, Missouri, in 1840, where he was instrumental in organizing emigrant parties to start for California, the first of which left in 1841. At a "large assembly of interested settlers" who constituted the Western Emigrant Society, he aroused his hearers to a high pitch of enthusiasm, describing California as a land of "perennial spring and boundless fertility." Cleland writes "to an ague-racked assembly whose idea of paradise was a land free from chills and fever, Roubidoux gave the following assurance:

"There never was but one man in California who had the chills. He was from Missouri and carried the disease in his system. It was such a curiosity to see a man shake with the chills that the people of Monterey went eighteen miles into the country to see him."

In 1856 the first railroad to be built in California was constructed between Sacramento and Folsom and large numbers of Italian laborers were imported for this work. An extremely virulent form of malaria is said to have occurred following this event and it is believed that these laborers may have brought a severe type of malaria which prevailed in Italy. Professor Herms, in his paper delivered at the International Congress of Entomology at Ithaca in August, 1928, refers to the report of Praslow, a German physician and traveler, who visited California in 1857 and who found malaria well established at that time,

stating that whole tribes of California Indians were wiped out by the disease. Dr. Thomas M. Logan, the first secretary of the California State Board of Health, in several of his biennial reports, refers to the extreme prevalence of malaria throughout the State in 1858. Dr. George M. Kober, a surgeon in the United States Army, who was stationed at Fort Bidwell, Modoc County, in the seventies and eighties and who has died only within the last few months in Washington, D. C., in a report to the State Board of Health in 1884 said: "I was informed by one of the pioneers of this valley (Surprise and Gooselake valleys) that when the company of the Second California Volunteer Cavalry arrived here in July, 1865, a great many of the men were suffering from 'chills and fever' contracted in the Sacramento Valley, where the company was mustered in, and that after a few months 'they looked like a different set of men.' "

It is probable that the construction of the transcontinental railroad, which was completed in 1869, also brought many foreign laborers who were infected with malaria.

In the sixties and seventies no adequate statistical information concerning the prevalence of malaria in California is available but there are voluminous reports upon the miasmatic theory of disease and the role of miasmas in the production of malaria. Dr. F. W. Hatch, secretary of the California State Board of Health, in 1876 and 1877, addressed questionnaires to a large number of physicians in the State. These questionnaires asked for information concerning the

prevalence of malarial fevers and also for information concerning the local causes of such diseases. The responses varied from: "They do not exist except where soil is upturned in building railroads" to: "Malaria is sometimes wafted up the cañons by the prevailing breezes." It is apparent, from the replies to these questionnaires, that the geographical distribution of malaria in California in the late seventies was about the same as it was in the early fifties. In Shasta County, Harold Farnsworth Gray found records of three deaths from malaria which occurred in 1873.

The practice of irrigation was started on a large scale in the late seventies and there were heated arguments among medical men and agriculturists as to the role that irrigation might play in the spread of malaria. In the biennial report of the State Board of Health, issued in 1884, Dr. H. S. Orme, a member of the Board, presented an article entitled "Irrigation—Its Influence on Health, etc." This article included reports from a number of physicians residing in different parts of California. Opinions regarding the role of irrigation in the production of malaria differed greatly. Dr. Chester Rowell of Fresno stated that "irrigation in itself need not and does not make a sickly country." He held to the belief that irrigation, if applied properly, would not cause malaria. Others took violent exception to this opinion. These were days when mysterious, invisible miasmas drifted about the country, dealing destruction to those whom they might envelope. It was during this period that the planting of eucalyptus trees was advocated for the purpose of preventing malaria and tuberculosis as well. These days represent the dark ages of our public health era and we can pass lightly over the writings of this period but we must regard with respect the profound efforts that the serious ethical-minded medical men of this time expended in their unsuccessful attempts to find the causes of many diseases, one of the most important of which was malaria.

In the early nineties cases of malaria were more thoroughly reported, perhaps, than they were at any time during preceding years. It is interesting to note that from January of 1891 to June of 1896 more than 12,000 cases of malaria were reported to the California State Board of Health. In some months as many as 450 cases were reported. The dates of highest incidence consistently were July, August, September and October. The geographical distribution was no different from that of preceding years. The numbers of cases as reported, by years, during this decade were as follows:

| | |
|-------------------------------|------|
| 1891 (July to December) ----- | 1957 |
| 1892 ----- | 2703 |

| | |
|------------------------------|------|
| 1893 ----- | 2705 |
| 1894 ----- | 2568 |
| 1895 ----- | 1571 |
| 1896 (January to June) ----- | 604 |

It was in 1898 that Sir Ronald Ross discovered the role of the mosquito in the transmission of malaria. The parasite had been discovered by Lavaran in 1880 but nothing had been accomplished in the control of the disease until after Ross's remarkable discovery. In 1903, five years after this historical event, the first recorded work of mosquito control in California was undertaken in the vicinity of San Rafael, followed in 1904 by the work of the Burlingame Improvement Club in San Mateo County. In 1909, Dr. William F. Snow, Secretary of the California State Board of Health, called malaria the minotaur of California to which monster, each year, sacrifices in human lives were made. In 1910, Dr. Snow, in a publication entitled "Growing Humans," recounted the millions of dollars that were lost in California through the ravages of malaria. That same year, 1910, Professor Herms conducted the first campaign against the malaria-bearing mosquito at Penryn in Placer County, followed by a similar enterprise at Oroville in Butte County. Several other communities carried on volunteer work in mosquito control during the years that followed, but it was not until after 1915, when the Mosquito Abatement Act was written on the statutes, that widespread community work in malaria control was started. Since 1915 the decline has been most conspicuous and it has been consistent each year. During recent years the case rate for the disease has hovered around 1.0 and the death rate varies from 0.2 to 0.3 per hundred thousand population. The past ten years have in reality brought malaria in California almost to the vanishing point. During the seven years, 1914-1920, 4759 cases of malaria were reported to the State Department of Public Health, and during the ten years, 1921-1930, 1277 cases were reported. During the seven years referred to 86.3 per cent of all cases reported occurred in the Sacramento and San Joaquin valleys. During the ten-year period, 1921-1930, 57.3 per cent of all cases reported occurred in the two great interior valleys. The distribution of the disease at the present time, although greatly reduced in volume, is practically identical with its distribution during the years 1849-1854, as outlined in the reports of the army surgeons stationed at the fifteen posts scattered throughout California. The disease is still with us and it must still be fought, lest it arise again to constitute one of our major public health problems. In order to safeguard the health of the people, warfare against mosquitos must be carried on continually. Carriers of malaria are arriving from other states and

other countries. The large medical centers, Los Angeles and San Francisco, report many cases of malaria in persons who have arrived recently from other states and countries. There is a constant danger that the disease may be reintroduced into communities where it has now disappeared entirely. It is only by continuing operations against the anopheles mosquito that safety can be assured. Too much credit can not be given to Professor Herms and to his associates who inaugurated and have carried on scientific methods in the control of mosquitos and malaria. The economic benefits that have accrued and the tremendous amount of human suffering that has been prevented constitute a monument to the achievements of this group of men. If the army surgeons of the fifties and the medical men of Civil War days and later could only know that their much-feared miasmas have disappeared and that the insignificant mosquito has assumed their place, what astonishment would be theirs!

LABORATORY WORKERS TAKE EXAMINATIONS

A total of 68 persons applied for the November examinations for certificates of proficiency as technicians in the various branches of laboratory work. The examinations were held in Los Angeles and in Berkeley under the supervision of Dr. W. H. Kellogg, Chief of the Division of Laboratories of the State Department of Public Health.

Thirteen persons qualified for the senior certificate in bacteriology and seven qualified for the junior certificate. Six persons qualified for the senior certificate in biochemistry and seven qualified for the junior certificate in that subject. Seven persons qualified for the senior certificate in parasitology and four qualified for the junior certificate.

A total of twenty-nine senior certificates was granted, and twenty-four junior certificates were also issued. Thirty-two persons failed to qualify for any certificate.

MOSQUITO ABATEMENT DISTRICT OFFICERS TO MEET

The officers of mosquito abatement districts in California held an all-day meeting in Agriculture Hall, University of California Campus, Berkeley, December 15, 1931.

Harold F. Gray, Engineer in Charge of the Alameda County Mosquito Abatement District arranged the program. Professor W. B. Herms, Professor Stanley B. Freeborn, and other individuals who are engaged in mosquito control work, presented papers.

A banquet, followed by an illustrated lecture by Professor Herms, was the feature of the evening program.

STANISLAUS COUNTY HEALTH OFFICER DIES

Dr. O. I. Bemis, who has been health officer of Stanislaus County since early in the year, died on December 7th. No arrangements have been made as yet for securing a successor to Dr. Bemis.

LIST OF DISEASES REPORTABLE BY LAW

| | |
|----------------------------|---|
| ANTHRAX | OPHTHALMIA NEONATORUM |
| BERI-BERI | PARATYPHOID FEVER |
| BOTULISM | PELLAGRA |
| CHICKENPOX | PLAQUE |
| CHOLERA, ASIATIC | PNEUMONIA (Lobar) |
| COCCIDIOIDAL GRANULOMA | POLIOMYELITIS |
| DENGUE | RABIES (Animal) |
| DIPHTHERIA | RABIES (Human) |
| DYSENTERY (Amoebic) | RELAPSING FEVER |
| DYSENTERY (Bacillary) | ROCKY MOUNTAIN SPOTTED (or Tick) FEVER |
| ENCEPHALITIS (Epidemic) | SCARLET FEVER |
| ERYSIPelas | SEPTIC SORE THROAT |
| FLUKES | SMALLPOX |
| FOOD POISONING | SYPHILIS* |
| GERMAN MEASLES | TETANUS |
| GLANDERS | GONOCOCCUS INFECTION* TRACHOMA |
| HOOKWORM | TRICHINOSIS |
| INFLUENZA | TUBERCULOSIS |
| JAUNDICE (Infectious) | TULAREMIA |
| LEPROSY | TYPHOID FEVER |
| MALARIA | TYPHUS FEVER |
| MEASLES | UNDULANT (Malta) FEVER |
| MENINGITIS (Meningococcic) | MENINGITIS (Cerebrospinal) WHOOPING COUGH |
| MUMPS | YELLOW FEVER |

*Reported by office number. Name and address not required.

QUARANTINABLE DISEASES

| | |
|-------------------------------------|---------------|
| CEREBROSPINAL MENINGITIS (Epidemic) | POLIOMYELITIS |
| CHOLERA, ASIATIC | SCARLET FEVER |
| DIPHTHERIA | SMALLPOX |
| ENCEPHALITIS (Epidemic) | TYPHOID FEVER |
| LEPROSY | TYPHUS FEVER |
| PLAQUE | YELLOW FEVER |

MORBIDITY*

Diphtheria.

81 cases of diphtheria have been reported, as follows: Fresno County 3, Fresno 1, Los Angeles County 13, Alhambra 4, Compton 2, Long Beach 2, Los Angeles 29, Pasadena 1, San Fernando 1, San Gabriel 1, Santa Monica 1, Monterey Park 1, Madera County 1, Napa County 1, Orange County 1, Fullerton 3, Santa Ana 2, Seal Beach 1, La Habra 1, Placentia 1, Riverside 3, Sacramento 2, San Bernardino 1, San Diego 1, San Joaquin County 1, Stockton 1, Tulare County 1, Ventura County 1.

Scarlet Fever.

163 cases of scarlet fever have been reported, as follows: Berkeley 2, Oakland 2, Oroville 1, Colusa County 1, Colusa 3,

* From reports received on December 14th and 15th for week ending December 12th.

Contra Costa County 1, Pittsburg 1, Fresno County 7, Fresno 4, Bakersfield 2, Los Angeles County 9, Avalon 3, Beverly Hills 1, Compton 7, Inglewood 1, Long Beach 9, Los Angeles 51, Pasadena 1, Redondo 2, Santa Monica 4, Whittier 1, Torrance 4, South Gate 1, Pacific Grove 1, Riverside County 2, Sacramento 3, San Bernardino County 1, San Diego 1, San Francisco 7, Arroyo Grande 2, Santa Barbara County 4, Santa Barbara 2, San Jose 1, Santa Cruz County 1, Santa Cruz 3, Vallejo 1, Stanislaus County 2, Yuba City 4, Lindsay 7, Ventura County 3.

Measles.

146 cases of measles have been reported, as follows: Alameda 1, Oakland 1, Humboldt County 34, Arcata 1, Eureka 26, Fortuna 4, Kern County 1, Hermosa 1, Los Angeles 2, Pasadena 2, Monterey County 11, Monterey 2, Pacific Grove 9, Fullerton 2, Riverside 1, Sacramento 40, San Francisco 6, Santa Clara County 1, Stanislaus County 1.

Smallpox.

5 cases of smallpox have been reported, as follows: Oroville 1, Riverside 1, San Francisco 3.

Typhoid Fever.

10 cases of typhoid fever have been reported, as follows: Fresno County 1, Fresno 1, Los Angeles 1, Riverside County 2, Riverside 3, San Diego 1, California 1.**

Whooping Cough.

130 cases of whooping cough have been reported, as follows: Alameda 2, Berkeley 3, Oakland 7, Contra Costa County 5, Los Angeles County 2, Alhambra 1, Beverly Hills 2, Inglewood 1, Long Beach 2, Los Angeles 23, Monrovia 3, Pasadena 2, San Fernando 1, Monterey 3, Orange County 2, Riverside County 1, Riverside 1, Sacramento 2, San Diego 9, San Francisco 2,

San Joaquin County 22, Stockton 2, San Luis Obispo County 2, San Luis Obispo 3, Santa Barbara County 11, Santa Maria 8, Santa Clara County 3, San Jose 1, Ventura County 4.

Meningitis (Epidemic).

8 cases of epidemic meningitis have been reported, as follows: Fresno County 1, Kern County 1, Kings County 2, Los Angeles 1, San Francisco 3.

Poliomyelitis.

3 cases of poliomyelitis have been reported, as follows: Fresno County 2, Los Angeles County 1.

Undulant Fever.

5 cases of undulant fever have been reported, as follows: Eureka 1, Los Angeles 2, Signal Hill 1, San Bernardino County 1.

Septic Sore Throat.

2 cases of septic sore throat have been reported, as follows: South Gate 1, Ventura County 1.

Encephalitis (Epidemic).

One case of epidemic encephalitis from Fresno was reported.

Food Poisoning.

6 cases of food poisoning from Long Beach were reported.

Jaundice (Epidemic).

One case of epidemic jaundice from Humboldt County was reported.

** Cases charged to "California" represent patients ill before entering the State or those who contracted their illness traveling about the State throughout the incubation period of the disease. These cases are not chargeable to any one locality.

COMMUNICABLE DISEASE REPORTS

| Disease | 1931 | | | 1930 | | | | |
|-------------------------|-------------|---------|---|-------------|---------|---|-------|--|
| | Week ending | | Reports for week ending Dec. 12 received by Dec. 15 | Week ending | | Reports for week ending Dec. 13 received by Dec. 16 | | |
| | Nov. 21 | Nov. 28 | | Dec. 5 | Nov. 22 | Nov. 29 | | |
| Actinomycosis | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| Anthrax | 0 | 1 | 0 | 0 | 0 | 0 | 0 | |
| Chickenpox | 279 | 245 | 324 | 372 | 285 | 240 | 389 | |
| Coccidioidal Granuloma | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| Diphtheria | 115 | 101 | 123 | 81 | 68 | 84 | 65 | |
| Dysentery (Amoebic) | 1 | 4 | 2 | 2 | 0 | 1 | 5 | |
| Dysentery (Bacillary) | 3 | 8 | 5 | 0 | 3 | 10 | 2 | |
| Encephalitis (Epidemic) | 0 | 0 | 1 | 1 | 2 | 2 | 0 | |
| Erysipelas | 13 | 16 | 16 | 20 | 12 | 13 | 7 | |
| Food Poisoning | 0 | 5 | 1 | 6 | 0 | 10 | 0 | |
| German Measles | 15 | 5 | 7 | 4 | 10 | 9 | 10 | |
| Gonococcus Infection | 149 | 144 | 133 | 186 | 160 | 156 | 145 | |
| Influenza | 73 | 42 | 70 | 105 | 31 | 50 | 69 | |
| Jaundice (Epidemic) | 0 | 0 | 0 | 1 | 0 | 0 | 0 | |
| Leprosy | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| Malaria | 2 | 0 | 0 | 2 | 1 | 0 | 0 | |
| Measles | 181 | 119 | 243 | 146 | 117 | 197 | 270 | |
| Meningitis (Epidemic) | 4 | 5 | 5 | 8 | 5 | 4 | 7 | |
| Mumps | 110 | 96 | 114 | 137 | 186 | 137 | 220 | |
| Ophthalmia Neonatorum | 1 | 0 | 0 | 0 | 0 | 1 | 0 | |
| Paratyphoid Fever | 7 | 1 | 1 | 3 | 1 | 0 | 0 | |
| Pellagra | 1 | 1 | 1 | 1 | 0 | 5 | 2 | |
| Pneumonia (Lobar) | 48 | 51 | 73 | 88 | 56 | 114 | 85 | |
| Poliomyelitis | 5 | 3 | 8 | 3 | 27 | 28 | 13 | |
| Rabies (Animal) | 9 | 6 | 6 | 7 | 13 | 35 | 18 | |
| Scarlet Fever | 146 | 134 | 148 | 163 | 98 | 102 | 108 | |
| Septic Sore Throat | 1 | 1 | 1 | 2 | 0 | 0 | 0 | |
| Smallpox | 3 | 14 | 20 | 5 | 17 | 80 | 41 | |
| Syphilis | 159 | 167 | 141 | 204 | 156 | 216 | 162 | |
| Tetanus | 6 | 0 | 0 | 2 | 3 | 1 | 0 | |
| Trachoma | 3 | 2 | 3 | 3 | 7 | 4 | 1 | |
| Trichinosis | 1 | 1 | 0 | 0 | 1 | 0 | 0 | |
| Tuberculosis | 173 | 184 | 177 | 133 | 184 | 155 | 250 | |
| Typhoid Fever | 15 | 10 | 10 | 10 | 12 | 11 | 17 | |
| Typhus Fever | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| Undulant Fever | 2 | 2 | 1 | 5 | 4 | 3 | 0 | |
| Whooping Cough | 127 | 73 | 117 | 130 | 97 | 108 | 109 | |
| Totals | 1,652 | 1,441 | 1,751 | 1,830 | 1,556 | 1,778 | 1,990 | |
| | | | | | | | 2,030 | |

Influenza jumped up to 105 cases reported last week.

Scarlet fever, whooping cough and chickenpox are running above normal prevalence.

Diphtheria was slightly less prevalent last week.

Measles has dropped 50 per cent in number of reported cases.